Emanuele Mengoli

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Specialisation*:*
Machine Learning theory, Stochastic Modelling and Wireless Networks.

EDUCATION

Télécom Paris - INRIA   Mar 2025 - Mar 2028
Ph.D. in Applied Probability   *Paris, France*

- □ <u>Subject</u>: Stochastic Modelling of Non-Terrestrial Networks (NTNs).

- □ Member of the MATHNET team (formerly DYOGENE) at INRIA and LTCI lab at Télécom Paris.

- □ Supervisors: Prof. F. Baccelli (ENS Paris), Prof. L. Decreusefond (Télécom Paris).

École Polytechnique Fédérale de Lausanne (EPFL)   Apr 2024 - Sept 2024
Master's Thesis Visiting Student - Computer Science   *Lausanne, Switzerland*

- □ <u>Thesis</u>: Dynamic Bayesian Optimisation (DBO) for improving the performance of
  Cellular Networks.

- □ <u>Key Results</u>: Designed a novel probabilistic mobility model and developed a cellular network simulator
  to evaluate a new DBO algorithm for downlink power optimisation against naïve approaches.

- □ Supervisors: Prof. P. Thiran (EPFL), Dr. A. Bardou (EPFL).

École Polytechnique   Sept 2022 - Sept 2024
MSc in Computer Science - Track: Internet of Things   *Paris, France*

- □ <u>Double Major</u>: Machine Learning, Computer Networks; <u>GPA</u>: 3.89/4.

- □ Key subjects: Machine, Reinforcement and Deep Learning, Federated Learning,
  Large scale optimization, Computer and Wireless Networks, Embedded Systems.

Linköping University (LIU)   Aug 2021 - Jan 2022
Exchange Programme - Industrial Engineering   *Linköping, Sweden*

- □ <u>GPA</u>: 4.5/5.

Alma Mater Studiorum – Università di Bologna (UNIBO)   Sept 2019 - Jul 2022
BSc in Industrial Engineering - Minor: Information & Communication Technology   *Bologna, Italy*

- □ <u>Final mark</u>: 110/110 cum LAUDE; <u>GPA</u>: 28.94/30.

- □ <u>Thesis</u>: Conception and Design of a Predictive Maintenance System for the Automotive Sector.

- □ Key subjects: Signal Processing, Operation Research, Electronics, Logistics, Stochastic Process Control.

WORK EXPERIENCE

INRIA (MATHNET team)   Sept 2024 - Mar 2025
R&D Engineer - Predoctoral   *Paris, France*

- □ Research as part of the EU-funded INSTINCT project, applying stochastic
  geometry and estimation theory tools for modelling Joint Communication and Sensing (JCAS)
  scenarios in 6G networks.

- □ Pursued academic training on advanced probability theory and satellite communications.

- □ Supervisor: Prof. F. Baccelli (ENS Paris).

Cisco Meraki   Apr 2023 - Sept 2023
Software Engineer Intern - Data Science team   *Paris, France*

- Theorised and developed a novel time series prediction model and a causal inference algorithm.
  Both algorithms were used to build an anomaly detection product for L2 devices.

- Key Results: Conference publication [1].

- Supervisors: Prof. T. H. Clausen (École Polytechnique) and Dr. Z. Yao (Cisco Meraki).

National Inter-University Consortium for Telecommunications (CNIT)   Nov 2022 - Apr 2023
Scientific Research Partner   *Bologna, Italy*

- Developed a low computational cost algorithm for RIS-aided UAV tracking using a Dual
  Function Base Station (DFBS) as a signal source, in a Non-Line-of-Sight (NLOS) scenario.

- Key Results: Contribution to publication [2].

- Supervisor: Prof. F. Guidi (UNIBO).

Cluster Reply   Mar 2022 - May 2022
Junior IT Consultant Intern   *Turin, Italy*

- Designed a predictive maintenance product for vehicles failure prediction, combining statistical
  process control and regression-based techniques with a cloud infrastructure for edge deployment.

- Jointly led sales and product development.

- Key Results: Algorithm got acquired by third-part company (Movyon) for Tunnel Fault Monitoring.

- Supervisors: Prof. F. Guidi (UNIBO) and S. Agostini, Associate Partner (Cluster Reply).

Junior Enterprise Bologna (JEBO)   Jul 2021 - Jul 2022
Vice President   *Bologna, Italy*

- Managed 90 human resources, overseeing 51K € in revenue (+60%).

- Led partnership management – created 10 new collaborations.

- Creator of "Coffee with Entrepreneurs" career orientation program (moderator of 3 events):

  - 30 entrepreneurs involved, 1K podcast views, avg. 30 attendees per event.

PUBLICATIONS

[1] E. Mengoli, Z. Yao, W. Wei, and T. Clausen, "Develop end-to-end anomaly detection system," in *2023 IEEE International Conference on Data Mining Workshops (ICDMW)*, IEEE, 2023, pp. 1370–1379.

[2] F. Guidi, A. Guerra, E. Mengoli, and A. Zanella, "A statistical characterization of communication performance in ris-aided networks," in *ICASSP 2024-2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, IEEE, 2024, pp. 12 921–12 925.

[3] E. Mengoli, L. Moll, V. Strozzi, and E.-M. El-Mhamdi, "On the byzantine fault tolerance of signsgd with majority vote," *arXiv preprint arXiv:2502.19170*, 2025.

EXTRACURRICULAR ACTIVITY

Federazione Italiana Pallacanestro (FIP)   Dec 2014 - Sept 2022
Basketball referee   *Italy*

- "Trofeo delle regioni" (2019) - selected as one of the two best referees in Tuscany.

- "14th World Maxibasketball Fimba Championship" (2017).

Skills Summary

- **Languages**: Italian: Native, English: Proficient, Spanish: Fluent, French: Intermediate.
- **Tools**: Python, SQL, Java, C, LaTeX, AWS, Azure, Docker, Git, GitLab, GitHub, MySQL, Arduino, Trello, Jira, Microsoft Office Suite, Google Suite, Google Data Studio.